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United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Seed and Plant Introduction and Distribution,

WASHINGTON, D. C.

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DISTRIBUTION OF THE RUSK CITRANGE IN 1906.

In the course of the experiments conducted by the Office of Plant Breeding Investigations of this Bureau, several new hardy citrus fruits, or *citranges*, have been produced, which are believed to possess special value for general cultivation in the southern section of the United States.

Cooperative arrangements were made by which the trees of the new varieties are to be distributed through this Office, and Dr. Herbert J. Webber, Physiologist in Charge of Plant Breeding Investigations, has prepared this circular especially to accompany the trees of the Rusk citrange.

A. J. PIETERS,
Botanist in Charge.

Approved:

B. T. GALLOWAY,
Chief of Bureau.

WASHINGTON, D. C., *February 12, 1906.*

DISTRIBUTION OF THE RUSK CITRANGE.

ORIGIN AND DESCRIPTION.

For several years the Department of Agriculture has had in progress experiments in the production of hardy frostproof oranges. The Trifoliolate orange, which is grown extensively as a hedge plant in the southern United States, is grown out of doors as far north as New York. The fruit is small, very bitter, acrid, gummy, seedy, and inedible. This hardy species was crossed with the ordinary sweet orange, with the object of producing hybrids combining the hardy, cold-resisting character of the Trifoliolate species with the desirable fruit qualities of the sweet orange. From the numerous crosses made by the writer, in conjunction with Mr. W. T. Swingle, of the Department of Agriculture, a number of hybrids were produced, and several of these which have been grown and tested give evidence of being of considerable value. The new hybrid fruits are very different from the orange, lemon, lime, or any other member of the citrus family and have been named citranges.

One of these new varieties, or citranges, which is a hybrid of the common orange used as the mother parent and the Trifoliolate orange used as the father parent, has, with the approval of the Secretary of Agriculture, been named "Rusk," in honor of the first Secretary of Agriculture, Hon. J. M. Rusk, under whose administration the work on citrus fruits in Florida was originally undertaken by the Department. A technical description of the Rusk citrange follows:

Fruit compressed, spherical, or nearly round; small, $1\frac{1}{2}$ to $2\frac{1}{4}$ inches in diameter, $1\frac{1}{4}$ to $1\frac{3}{8}$ inches high; color, when fully mature, deep orange, with reddish flush of cadmium orange at apex; surface smooth and glossy, with a few scanty hairs visible under magnification; very heavy, frequently sinking in water; calyx persistent, green, rather larger than that of the ordinary orange; skin adhering very close to the fruit, thin, three thirty-seconds to one-eighth inch thick, tender; oil glands small and round; pulp tender, melting, exceptionally juicy, orange yellow in color; pulp cells small, similar in shape to those of ordinary orange; segments, 10; membranes thin and tender, thus making very little rag; axis small, one-eighth to three-sixteenths inch in diameter; flavor sprightly acid and slightly bitter; nearly seedless, averaging one seed to two fruits; aroma strong and pleasant, a combination of that of the sweet orange and the Trifoliolate orange. Tree similar in shape to Trifoliolate orange, vigorous and hardy, evergreen or semi-evergreen; tall and shapely; foliage dense, leaves trifoliate and larger than those of the ordinary Trifoliolate orange. Season of maturity very early, from September 1 to November 1.

The fruit of the Rusk citrange is a beautiful little orange of excellent texture and exceedingly juicy. It is rather too sour to eat out of hand, but with sugar is very palatable. The bitterness is no more pronounced than in the grapefruit, and the aroma, which is derived largely from the Trifoliate orange, is very strong and pleasant. The fruits of the Rusk may be utilized for making citrangeade, similar to lemonade or limeade, and may be eaten as a breakfast fruit with sugar. They also make excellent pies, preserves, and marmalade, and may be used for general culinary purposes.

HARDINESS.

The tests which have been made with the Rusk citrange indicate that it is much less susceptible to injury by cold than the ordinary orange. Young trees in northern Florida have endured severe cold weather, when the thermometer registered from 15° to 17° F., without losing their leaves. At the Georgia Experiment Station the Rusk citrange survived a temperature of 8° F. in December, 1901, without serious injury. It is believed that the trees can be grown without protection in South Carolina, Georgia, northern Florida, Alabama, southwestern Tennessee, Mississippi, Louisiana, eastern and southern Texas, southern Arkansas, southern Arizona, southern New Mexico, and the warm regions of low altitude in California, Oregon, and possibly Washington. The distribution of the stock of this variety by the Department of Agriculture will be limited to these sections.

CULTIVATION.

The Rusk citrange is not recommended for commercial cultivation on a large scale. While the fruit is of undoubted value, it does not compare in quality with the fine oranges of Florida and California. Its greatest value will probably be in its use as a "home" fruit. A few trees should be grown in the yard or garden, and these will furnish sufficient fruits for home use.

The trees for distribution are budded on hardy Trifoliate orange stocks. The buds were inserted low on the stocks, and the point of union of the stock and scion can in most cases be easily distinguished about 3 to 6 inches above the roots.

No special soil can be recommended at present for the citrange, as our experience with the variety is as yet too limited. The soil, however, should be thoroughly drained.

In planting, follow the ordinary practice used in planting other fruit trees such as peach trees, pear trees, etc. The tree of the Rusk citrange grows to a height of from 15 to 20 feet or more, with a top from 10 to 12 feet in diameter.

In most soils the trees will require to be manured if they are to do well. Citrus fruits in general require a fertilizer high in potash con-

tent. The ordinary orange tree fertilizer contains from 3 to 4 per cent of ammonia, 5 to 6 per cent of phosphoric acid, and 10 to 13 per cent of potash. The citrange should probably be cultivated in general about the same as peach trees or pear trees.

In ordinary practice citrus trees are not pruned, except when young in order to guide and shape the first growth. It is believed that very little or no pruning will be necessary with the citrange. The trees distributed are buds 7 or 8 months old, and if they receive proper care they should produce their first fruit in about three to four years after planting.

REPORT OF RESULTS DESIRED.

The cultivation of the citrange is experimental, as the fruit is entirely new and comparatively untried, and the extension of the cultivation of the variety and the results obtained with it will be an interesting item in the annals of American horticulture. It is earnestly urged that all persons who receive the trees should give them special care. A record will be kept by the Department of Agriculture of the name and address of every person to whom stock is sent, and in due time reports will be requested from each on the condition of the trees and the results obtained. The trees sent out are of considerable value, in view of their limited number and the fact that stock of this variety can not be obtained elsewhere. Persons who receive the trees are urged to aid the Department in introducing and establishing the variety by making notes on the trees as to hardiness, behavior under the methods of fertilization and cultivation given, character of the soil, value and uses of the fruit, etc., and be prepared to furnish the Department with a careful record in regard to the results obtained.

PUBLICATION ON THE CITRANGE.

A detailed report has been issued giving an account of the experiments which led to the production of the Rusk citrange and containing colored and photographic illustrations of the fruit and tree. Copies of this report will be sent to every person who has received trees of the variety.

HERBERT J. WEBBER,
Physiologist in Charge of
Plant Breeding Investigations.

Approved:

A. F. WOODS,
Assistant Chief of Bureau.